DuPont™ FilmTec™ elements

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Product Data Sheet | Reverse Osmosis

FilmTec™ Fortilife™ XC220 Element

High Pressure Element for Industrial Ultra-High Brine Concentration



Key Features

- Ability to achieve reject Total Dissolved Solids (TDS) level up to 220 g/L NaCl within high pressure RO (HPRO) pressure limit (<83 bar)
- Reduced water volume to thermal treatment for zero-liquid discharge (ZLD).
- Enable CAPEX optimization via using standard system components .
- Robust membrane chemistry enabling a wide pH range for operation and cleaning.

Key Applications

Industrial wastewater minimum- and zero-liquid discharge (MLD/ZLD), such as in

- Chemical & Petrochemical
- Lithium-ion Battery Manufacturing
- Steel & Iron industry
- Power Generation
- Pulp & Paper
- Textiles

Resource recovery for industrial reuse
Sodium chloride recovery in Desalination
Ultra-high brine concentration in Direct Lithium Extraction (DLE)

Typical Properties

Product	Active Area ft² (m²)	Feed Spacer Thickness (mil)	Permeate Flow Rate gpd (m³/d)	Stabilized Salt Rejection (%)	Minimum Salt Rejection (%)
FilmTec™ Fortilife™ XC220 element	400 (37)	34	18,500 (70.1)	80	75

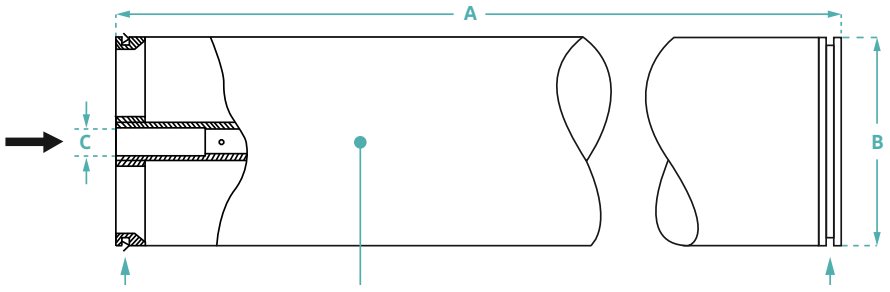
1. Permeate flow and salt rejection based on the following standard conditions: 32,000 ppm NaCl, 600 psi (41 bar), 77°F (25°C), pH 8 and 15% recovery.
2. Flow rates for individual elements may vary but will be no more than 20% below the value shown.
3. A period of continuous operation is generally required to reach stabilized salt rejection, with the rate of stabilization depending on feedwater characteristics and operating conditions.
4. Sales specifications may vary as design revisions take place.

Example Brine Concentration Projection

Product	Feed Pressure psi (bar)	Feed TDS (ppm)	Concentrate TDS (ppm)	Avg. Flux GFD (LMH)	Avg. Recovery (%)
FilmTec™ Fortilife™ XC220 element	1,011 (69.7)	128,884	220,836	8.82 (15)	85

1. Results obtained from a simulation of a four-stage 15:10:5:3 (7) vessel array treating 150 m³/h water containing sodium chloride at pH 7, 77°F (25°C) and flow factor = 0.7.
2. No warranty is provided for the application of this information since use conditions and applicable laws may differ from one location to another and may change with time.

Element Dimensions





FilmTec™ supplies coupler part number 313198 with each element. Each coupler includes two 3-912 EPR O-rings (part number 151705).

	Dimensions – inches (mm)
A	40.0 (1,016)
B	7.9 (201)
C	1.125 ID (29)

ID = Inner Diameter
1 inch = 25.4 mm

1. For element weight information refer to What is the weight of FilmTec™ elements as delivered? (Form No. 45-D04811-en)
2. For element packaging and shipping information refer to How are FilmTec™ elements packaged and shipped? (Form No. 45-D04811-en)

Form No. 45-D04993-en, Rev. 3
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Suggested Operating Conditions

Membrane Type	Polyamide Thin-Film Composite
Maximum Operating Temperature[1]	113°F (45°C)
Maximum Operating Pressure	1,200 psi (83 bar)
Maximum Pressure Drop	
Per Element	15 psi (1.0 bar)
Per Pressure Vessel (Minimum 4 Elements)	50 psi (3.5 bar)
pH Range	
Continuous Operation[1]	2 - 11
Short-Term Cleaning (30 min.)[2]	1 - 13
Maximum Feed Silt Density Index (SDI)	SDI 5
Free Chlorine Tolerance[4]	< 0.1 ppm

1. Maximum temperature for continuous operation above pH 10 is 95°F (35°C). Consult your DuPont representative for advice on applications above 95°F (35°C). Relevant information regarding operation at high temperature and pressure: FilmTec™ Seawater Elements Operating Limits (Form No. 45-D00691-en) and Shimming Elements (Form No. 45-D01057-en).
2. Refer to Cleaning Procedures for FilmTec™ Elements (Form No. 45-D01696-en).
3. For recommended feed and permeate flow rates, flux, and recovery for various feed sources, refer to FMembrane System Design Guidelines for 8" FilmTec™ Elements (Form No. 45-D01695-en).
4. Oxidation damage is not covered under warranty, DuPont recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to Dechlorinating Feedwater (Form No. 45-D01569-en) for more information.

Important General Information

- Keep elements moist at all times after initial wetting.
- For successful operation of Reverse Osmosis (RO) and Nanofiltration (NF) membrane systems, the operation must follow the guidelines provided in the FilmTec™ Reverse Osmosis / Nanofiltration Elements Operation Excellence and Limiting Conditions Tech Fact (Form No. 45-D04388-en).
- To prevent biological growth during prolonged system shutdowns, it is recommended that membrane elements be immersed in a preservative solution.
- The customer is fully responsible for the effects of incompatible chemicals and lubricants on elements.
- Avoid static permeate-side backpressure at all times.
- Permeate obtained from the first hour of operation should be discarded.
- The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

Please consider good operating practices for the optimal performance of the Reverse Osmosis membrane elements to assure damage free operation:

1. Loading of Pressure Vessels – Preparation & Element Loading (Form No. 45-D01602-en)
2. System Operation, including plant Start-Up Sequence (Form No. 45-D01609-en) and RO & NF Systems Shutdown (Form No. 45-D01613-en)
3. Handling, Preservation, and Storage (Form No. 45-D03716-en)

Full information of plant design, system operation, and troubleshooting is given in the FilmTec™ Reverse Osmosis Membranes Technical Manual (Form No. 45-D01504-en).

Regulatory Note

This product may be subject to drinking water application restrictions in some countries; please check the application status before use and sale.

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